DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

WELDING INSPECTION REPORT

Resident Engineer: Casey, William
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-027957
Date Inspected: 13-Jul-2012

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: American Bridge/Fluor Enterprises, a JV

OSM Arrival Time: 700
OSM Departure Time: 1830
Location: Job Site

CWI Name: Bernie Docena

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: SAS Tower

Summary of Items Observed:

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At Tower Base Electro Slag Weld (ESW), this QA observed ABF welder Wai Kitlai continuing to perform repair excavation at location 'V' face B (W-043) Y=5060mm due to Ultrasonic Testing (UT) detected defect. The repair excavation is being undertaken per Caltrans approved Request for Weld Repair (RWR) #201206-048. The welder was noted using carbon air arc gouging followed by grinding using a die grinder. The following excavation events were noted during the repair excavation;

ESW location	Y-dim	Depth of excavation	Noted defect:
1. 'V' (B)	7510mm	5mm	No relevant defect noted.
2. 'V' (B)	7510mm	15mm	No relevant defect noted.
3. 'V' (B)	7510mm	20mm	No relevant defect noted.

Since the reported depth of the UT detected defect was close to the surface and the excavation was already at 20mm deep, ABF QC Bernie Docena decided that the excavation was sufficient enough and instructed the welder to proceed with the repair. After the completion of the excavation and verification with Magnetic Particle Testing (MT) by both ABF QC and QA, the welder put in place the heater blanket and heated the boat shape repair excavation to more than 350°F using the Miller Proheat Induction System. During welding, QA randomly observed ABF/JV qualified welder Luo Xiao Hua perform CJP groove welding repair. The welder was observed

manually welding in the 3G (vertical) position utilizing Shielded Metal Arc Welding (SMAW) with 3.2mm diameter E7018H4R electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1000 Repair Rev. 2. The repair excavation was preheated and continuously maintained to more than 350 degree Fahrenheit using Miller Proheat 35 Induction Heating System prior/during welding. The ESW repair being welded is located at ESW 'V' face B, Y=7480mm to Y=7710mm was having dimensions of 230mm long X 45mm wide X 20mm deep and approved per Request for Welding Repair (RWR) #201206-048. During the shift, ABF QC Bernie Docena was noted monitoring the welder with measured working current of 115 amperes. During the shift, repair welding at location mentioned above was completed. The welder held the same preheat of 350°F on the repair for three hours after welding as required.

At Tower Base Electro Slag Weld (ESW) location 'P' face B (N-043), QA randomly observed ABF/JV qualified welder Wai Kitlai perform CJP groove welding repair. The repair excavation being welded has Caltrans approval per Request for Weld Repair (RWR) #201206-074. The welder was observed perform automatic welding in the 3G (vertical) position utilizing a Bug –o track mounted dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3000-3 Repair. The repair excavation was preheated and continuously maintained to more than 350 degree Fahrenheit using Miller Proheat 35 Induction Heating System prior/during welding. The ESW repair being welded is located at ESW 'P' face B, from Y=5020mm to Y=5350mm having dimensions of 330mm long X 55mm wide X 52mm deep. During the shift, ABF QC Bernie Docena was noted monitoring the welder with measured working current of 260 amperes, 23.2 volts with travel speed of 220mm per minute and calculated heat input of 1.65Kjoules per mm. At the end of the shift, 3G FCAW-G repair welding at location mentioned above was still continuing and the welder held the same preheat of 350°F on the excavation repair for three hours after welding as required.

Location	Weld No.	Y-dim.	Length	Width	Depth	Remarks
1. 'P'	N-043	5060mm	330mm	55mm	52mm	In progress.

At Tower Base Electro Slag Weld (ESW), this QA observed ABF welder Han Wen Yu (who took over from James Zhen) continuing to perform repair excavation at location 'Q' face B (E-043) Y=4060mm due to Ultrasonic Testing (UT) detected defect. The repair excavation is being undertaken per Caltrans approved Request for Weld Repair (RWR) #201206-083. The welder was noted using carbon air arc gouging followed by grinding using a die grinder. The following excavation events were noted during the repair excavation;

ESW location	Y-dim	Depth of excavation	Noted defect:
1. 'Q' (B)	4060mm	50mm	Top:15mm long linear indication noted. Mid: 1-13mm & 1-6mm long linear indication noted. Bot: 1-18mm & 10mm long linear indications noted.
2. 'Q' (B)	4060mm	>50mm	Excavation in progress.

WELDING INSPECTION REPORT

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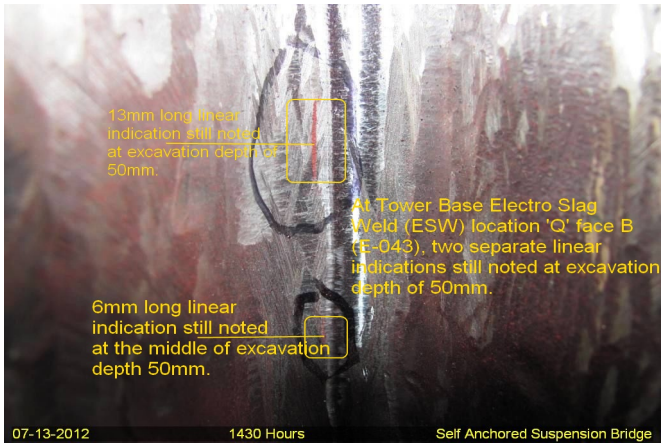

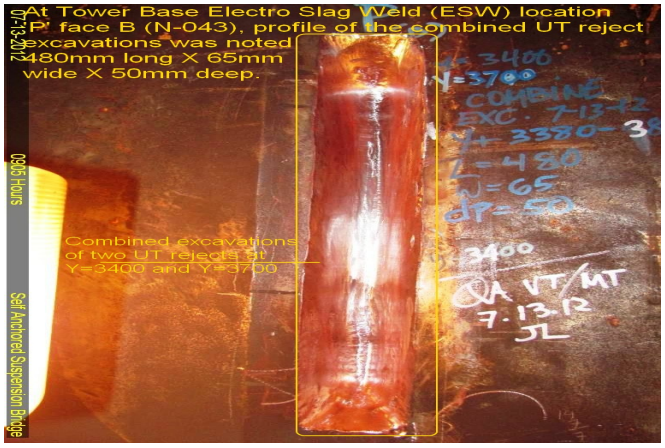

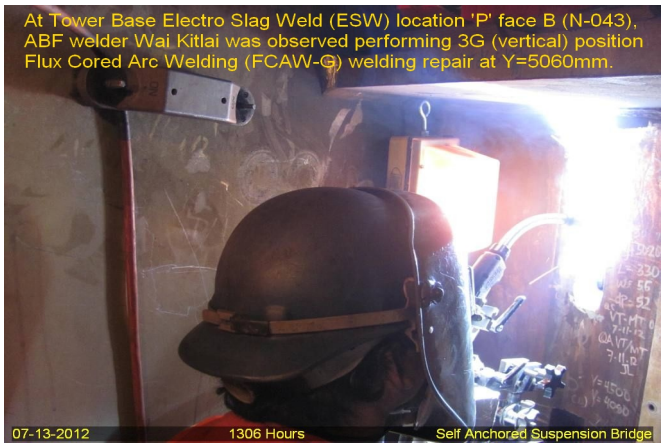

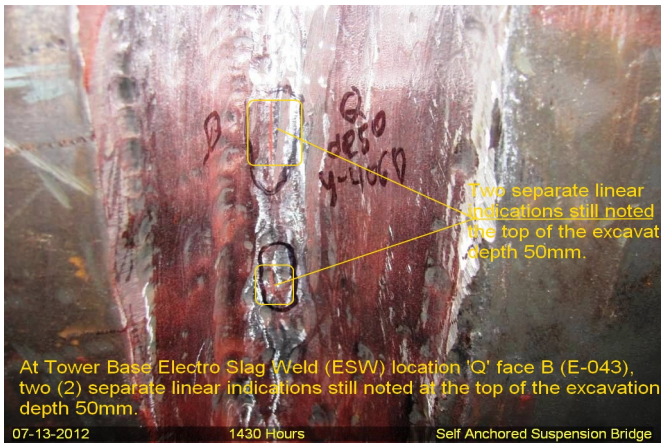

Summary of Conversations:

At Tower Base ESW 'V' face B (W-043) Y=7510mm, the reported depth of the UT detected defect was close to the surface and the excavation was already at 20mm deep when ABF QC Bernie Docena decided that the excavation was sufficient enough and instructed the welder to proceed with the repair.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact SMR Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer